Lesson Plan: Be a Water Molecule---Three States of Matter

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Step one: Preplanning selection of topic, etc.

- **Activity:** “Be a Water Molecule---Three States of Matter
- **Theme:** Group game which supports the third-grade science curriculum in a way for students to freely use their imaginations as one of the three states of matter.
- **Source:** internet website: www.childDrama.com
- **Drama/learning goals:**
  - To help learn about the three states of matter, liquid, solid, and gas
  - To promote good feelings
  - To provide a non-threatening opportunity for children to perform
- **Skill levels:**
  - Skill 2: Concentration: Members of the group will need to be able to focus or concentrate on individual and group activities.
  - Skill 3: Self Expression (non-verbal): Members of the group will need to be able to use their bodies to express their imagination and their own thoughts, feelings, and ideas.

Step two: Presentation of materials

- **Strategies for introducing the activity and establishing the mood:**

  **Welcome 3rd graders, today we are going to review what we learned from yesterday’s science lesson on the three states of matter and then we are going to play a fun game called “Be a Water Molecule—Three States of Matter.” Ask class the question: “Who remembers what the three states of matter are from yesterday’s science lesson?” Call on a student to tell the class the correct answer. Then say to the students: “We’re going to use the information we learned yesterday for today’s activity, so hopefully you all paid attention in class yesterday!”

- **Relationship to current unit:** related to chapter 2 in the communication, concentration, and imagination sections
- **Preparation and set-up of materials:** No materials are necessary. Where the students will be playing the game will need to be open with no chairs and tables around.

Step three: Discussion

- **Instructions for preparation:**
  - Ask the students to please form a straight, horizontal line in the front of the classroom. Tell them to begin going down the line stating “liquid, solid, or
gas” until each of the students have a particular state of matter assigned to them.

- Tell the students to each break up in their groups to discuss their specific state of matter for 1-3 minutes. Have group members sit when they are finished discussing so the teacher knows which groups have completed the assigned task.

- Have each group present what they remember about their state of matter from the previous day’s lesson on the three states of matter.

- Have group leaders explain to the rest of the class what each state of matter is like. They might say some things like:
  - For solid:
    - Has a definite size and shape
    - Particles are locked into place, very little wiggle room (space is tight)
      - Examples: desk, chair, table
  - For liquid:
    - Formed when temperatures increase and atoms gain energy
    - Don’t have a definite shape, but take the shape of whatever they are put in
      - Example: liquid poured in a bottle, vase, etc
  - For gas:
    - Matter that has no shape, size, or color of its own
    - When the temperature of a gas increases, the atoms move faster and faster
      - Means the gas is spread out in all directions, going very fast
      - Example: Oxygen & helium (explain to the kids this is what is put into balloons to make them stay in the air)

- Have the students help you (the teacher) move a group of chairs to form a huge circle. Make sure the circle is big enough for all the students to have plenty of room to move freely inside the limited space.

- **Instructions for playing:**
  - Tell the students to come into the middle of the space and get as close as they can to the rest of their classmates.
  - Have them move around freely between one another, but make sure they are staying in the space provided and not outside of the chairs.
  - At this point, the teacher might have to remind the students to not push and shove each other, depending on how well they get along with each other on a regular basis.
  - Say to the group: “Be sure you all are changing the shape of yourselves as an entire group frequently. If you are all changing your shape a lot, this means you are which state of matter at this point?” *(Answer: The students should simultaneously say liquid).*
  - Be sure to question the students and ask them how they know they are a liquid? *(Answer: They know they aren’t a gas because they aren’t flying*
all over the place at a high speed. They know they aren’t a solid because they aren’t confined to one space, with little room to move. Therefore, they must be a liquid.)

- After the students have been a liquid for a few minutes, tell them you are removing some of their energy. At this point, the children should be slowing down in speed. Have them grab hold of another classmate near them and stop moving altogether.
- Once the group has stopped completely, be sure to comment on nicely the mass is holding its shape.
- Once again, have the class decide on which state of matter they are at this point. (Answer: solid).

- Tell the students they are now regaining lots and lots of energy. Be sure to inform them to let go of their classmates by now if they haven’t already done so. Say to the class: “There is now so much energy that you all can’t stay in the space provided. You are allowed to even move outside of the chairs you wish, but only if you are one of those that I tap on the shoulder! Let them know that if they accidently bump into another student, they should try to do so lightly so they do not hurt each other.
- Comment that if the students do bump into each other, they will more than likely bounce off in a new direction because of the new state of matter they are now in.
- For the final state of matter, have the class decide which matter they are that they haven’t gone over yet. (Answer: Gas)

- Casting, volunteers, etc.:
  - Matter actors - the entire class
  - Leader - always the classroom teacher

- Strategies for involvement:
  - Encourage the students to all become a part of each state of matter they are pretending to be like.

- Check for understanding and clarity:
  - Every so often during the game, make sure to ask the class if they have any questions pertaining to the game itself. It might be necessary to explain a specific step of the game to the class so the students understand.

**Step four:** Playing the material

- Instructions: While the students are playing the game, remind them of the directions throughout so they continue to play the game correctly. During the activity, the instructor could even give helpful suggestions so the game goes more smoothly and is more fun. For example, while the entire class is pretending to be in the gas state, the teacher could give out suggestions if the class was having trouble. She or he could say something like, “Remember class, you are flying all over at a
very high speed in the space that you have.” This might help the students guess which state of matter they are if they are having difficulties guessing.

- **Sidecoaching ideas:** While the students play the game, the instructor can drop helpful hints. For example, the instructor could say, “Maybe you could move over this way more so you do not bump into your classmates so hard.”

- **Your participation:** The instructor can help the classmates come together as a whole to become the state of matter they are in the particular moment. The instructor should not become part of the class molecule because then there would be no one available to lead the class in this activity.

**Step five:** Evaluation and reflection

- **Questions to generate discussion and reflection:**
  - What part of the game is the most fun and interesting for you?
  - Which state of matter was it easier to be and why?
  - Which state of matter was the hardest to be and why?

**Step six:** Replaying

- **Be ready to respond to requests to replay the activity! 😊**
- **Strategies to encourage replaying:**
  - Make a change to the game to keep it interesting.
    - For example, the teacher could let all the students but one act out a state of matter. Then, the student who is not acting out gets to guess which state of matter his or her classmates are pretending to be.
    - Another way the teacher can have the students play out the game is by when having them act out the gas state of matter, tell the students to imagine they are a pot of boiling, steaming water. Also, the students could pretend they are a solid icicle when they are pretending to be a solid. See what reactions you get from the students. For example, if the students are pretending to be an icicle, they might act like they are shivering and cold, etc.

**Step seven:** Evaluation and reflection

- **Questions to generate discussion and reflection:** See step five!