Lesson Plan: Science Matter & Interactions Day Two

Grade: 2nd

Subject: Science (Day Two)

Materials: Chocolate Chips, Jellybeans, Starburst, Gummy Bears, Rulers, Bags, Containers, and Hot Water

Technology Needed: Computer/Active Board

Instructional Strategies:

- ☐ Direct instruction
- ☐ Guided practice
- ☐ Socratic Seminar
- ☐ Learning Centers
- ☐ Lecture
- ☐ Technology integration
- ☐ Other (list)
- ☐ Peer teaching/collaboration/ cooperative learning
- ☐ Visuals/Graphic organizers
- ☐ PBL
- ☐ Discussion/Debate
- ☐ Modeling

Guided Practices and Concrete Application:

- ☐ Large group activity
- ☐ Independent activity
- ☐ Pairing/collaboration
- ☐ Simulations/Scenarios
- ☐ Other (list)
- ☐ Hands-on
- ☐ Technology integration
- ☐ Imitation/Repeat/Mimic

Explain:

Standard(s)

Performance Standard 2-PS1-1
Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties.

Performance Standard 2-PS1-4
Construct an argument with evidence that some changes caused by heating or cooling can be reversed and some cannot

Objective(s)

At the end of the lesson, the students will be able to identify the states of matter and its properties based on heating/cooling by conducting an investigation on the impact of heating the candies.

Bloom's Taxonomy Cognitive Level:

- → Application: Conducting an investigation on states of matter of candies and what heating does to change their properties.
- → Analyze: Students are classifying and comparing properties of candies states of matter before and after heating

Differentiation

Below Proficiency:

- → Students with help, will demonstrate a partial understanding of solids and liquids in simpler details and process.

Above Proficiency:

- → Students will demonstrate in-depth applications regarding solids and liquids. Students will start to begin further question on properties of materials and their states of matter.

Approaching/Emerging Proficiency:

- → Students will demonstrate and be able to identify the states of matter, liquid, and solids. Students will be able to identify and describe different materials and their properties to melting.

Modalities/Learning Preferences:

- → Visuals: Step by Step process on Mystery Science (posted on board)
- → Auditory: Teacher explain step to them and discussions
- → Kinetics: Materials and Manipulatives

Classroom Management- (grouping(s), movement/transitions, etc.)

- → Countdowns 5,4,3,2 & 1
- → Turn & Talks will be grouped with neighbors
- → Groups will be based on their table spots

Movement/transitions:

- → From carpet: 1, 2, & 3 you may move back to your table spots. Or I will dismiss them by their colored rows at the carpet.
- → To carpet: Students, please come to your spots at the carpet.

Behavior Expectations- (systems, strategies, procedures specific to the lesson, rules and expectations, etc.)

- → Be respectful
- → Be responsible
- → Be Safe
- → Be Kind
- → Turn & Talks Expectations
  - o Look at your partner
  - o Listen to their words
  - o Voice level 2
  - o Take turns: everybody shares their thoughts
  - o Wait quietly when done

Minutes	Procedures
5	**Set-up/Prep:** → Prepare 9 bags of each Chocolate Chips, Jellybeans, Starburst, and Gummy Bears(label Jellybeans bag as A, label Starburst bag as B, and Gummy Bear bag as C) → Prepare 9 containers of Hot Water (just above body temperature) → 9 Rulers → Have computer prepared on active board
3	**Engage: (opening activity/ anticipatory Set – access prior learning / stimulate interest /generate questions, etc.)** → Students today we are going to be investigators and we are going to investigate some materials and their properties → Yesterday we had a discussion on ice, water, and plastic and their meltable properties → We learned that these materials are meltable when you add heat to them → So, today we are going to be investigators and investigate candies!
5	**Explain: (concepts, procedures, vocabulary, etc.)** → Students we are going to be looking at the states of matter of our candy first! → What are the states of matter of our candy right now? (liquid or solid) → Students are going to be paired into groups of 4 → Each group with get a Ziploc bag labeled A, B & C o Bag A: contains Jellybeans

Lesson Plan: Science Matter & Interactions Day Two

	○ Bag B: contains Gummy Bears ○ Bag C: contains Starburst ○ Bag with Chocolate Chips → Lastly, students are going to get a container of hot water Vocabulary: States of Matter; Liquid or Solid
15-20	**Explore: (independent, concreate practice/application with relevant learning task -connections from content to real-life experiences, reflective questions- probing or clarifying questions)** → Students I want you to carefully talk all three of your bags of candy and place them into the hot water → Ask students: What do you think is going to happen to the candies? Do you think their states of matter are going to change? Tell me more. → After some time in the water have students look at the candy, using their ruler have them stir the candy around and make observations → Ask students did any of your candy lose its shape? Explain to me why or why not you candy lost its shape? Describe the changes in your candy. → Have students take their bags out of the water and squish the candy with their fingers; making observations did your candy squish easy or not at all? Why do you think this might happen? → Clean up all items
3	**Review (wrap up and transition to next activity):** → As a whole group go through the results data chart, examining each groups candy → Which candy turned into a liquid state of matter? → Which candy stayed a solid state of matter? → If the water were hotter, do you think that the other candies would melt too? Tell me more about that?

Formative Assessment: (linked to objectives) **Progress monitoring throughout lesson- clarifying questions, check-** **in strategies, etc.** The formative assessment will include the clarifying questions, turn, and talk check in's, and observation of discussions during investigation of candy melts in hot water. **Consideration for Back-up Plan:**	**Summative Assessment (linked back to objectives)** **End of lesson:** Summative assessment will include the results data chart that will explain students understanding of states of matter and their observable properties. **If applicable- overall unit, chapter, concept, etc.:**

Reflection (What went well? What did the students learn? How do you know? What changes would you make?):
Something that made this lesson go well was the hands-on experience. The students were able to physically be involved in an investigation. The students were able to use their visual and sensory to investigate candies. The students actually got to feel and touch the melted candies and experience that observation piece rather then just showing them the melted candies. This added a whole different understanding for the students. Overall, that is what made this lesson go well. It was so helpful that they were able to investigate solids and liquids by using hands-on. Another aspect that made this lesson go well was the aspect of small groups. Originally, I was going to do this activity at the students table, but I decided to switch it to small groups because of the aspect of using hot water. The students were broken up into two different small groups, so I was able to ask them questions and get them think about why this is happening. Using small groups for this investigation just helped me get the content and information to the students while also having a greater control of the excitement.

Something that I would change to improve this lesson is more instruction on solids and liquids. We talked about what solids and liquids were, but I wish I would have incorporated more real life experiences and examples of solids and liquids. Also, something that made this lesson challenging was the aspect of using hot water. I just really focused in on the students and explained to them that the water is super-hot, and they can not touch it. I did have a very good group, so they ended up not touching the hot water. But for future groups it could be different so just keeping that in mind when working with hot water. One last thing I would change about this lesson is added more of a summative assessment. For this activity, the summative assessment was done more together as a class after the experiment but maybe having them draw or create a diagram/picture of the impact of heat on the candies and then what happened when they cooled. I think that having them create it would be fun and engaging.

The students learned about solids and liquids. They learned about what happens to solids and liquids when heated and when cooled. I know this because of the results data chart, the clarifying questions, and their overall understanding of what candies we should send to camp-way-too-hot.

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