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Step-by-step CBE Grade 8 Integrated Science guide for building a States of Matter model.

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Grade 8 Integrated Science guide for building a States of Matter model using modeling clay on Manila paper. Simple, practical JSS teaching resource.

Grade 8 States of Matter Clay Model | Stunning JSS Science Guide | MwalimuEase

How to Make a Grade 8 Science Model: Representing States of Matter Using Clay

By MwalimuEase Team | CBC Integrated Science | JSS Practical Resource

When introducing the **Particulate Nature of Matter** in Grade 8 under the Competency-Based Curriculum (CBC), learners often struggle to visualize invisible particles. A stunning, hands-on solution? Guide them to create a vibrant 3D model using simple **modeling clay and Manila paper**. This guide makes the concept unforgettable, improves retention, and boosts classroom engagement.

Materials Needed for the Project

Low-cost, easy-to-find supplies (perfect for Kenyan JSS):

- **One sheet of Manila paper** - Light yellow or white for high contrast.
- **Modeling clay** (bright colors: blue, red, or green) rolled into equal balls. *(Alternative: dry maize seeds or beans)*
- **Black marker pen & ruler** - For sharp outlines and labeling.
- **Office glue** - Secure clay balls firmly.
- **30cm ruler** - Keep sections tidy and professional.

Step-by-Step Construction (CBC-Aligned)

Follow these structured steps - learners will craft an impressive, term-ready science project.

STEP 1Prepare the Manila Paper Grid

Lay Manila paper flat. Use ruler and marker to divide into three columns: **SOLID | LIQUID | GAS**. Sketch a clear rectangular container box in each section. Leave space for labels and particle diagrams.

STEP 2Roll Vibrant Clay Particles

Learners roll clay into uniform balls (~1.5 cm diameter). You'll need **45-50 for Solid**, **25-30 for Liquid**, and **5-6 for Gas**. Uniform size creates a professional finish.

STEP 3Model the Solid Arrangement

In the **SOLID** section, apply glue and press clay balls in a tightly packed, orderly grid (rows and columns). No gaps! This illustrates strong intermolecular forces and fixed positions.

STEP 4Model the Liquid Arrangement

For **LIQUID**, arrange clay balls close together but randomly scattered, mostly settled at the bottom of the drawn container. Show irregular gaps - particles can slide past each other.

STEP 5Model the Gas Arrangement

In the **GAS** section, place only 5-6 clay balls with **wide empty spaces** across the whole container. This emphasizes rapid, random motion and large intermolecular distances.

Watch & Learn: Particle Model Demonstration

Watch particles in action - perfect visual reinforcement for learners.

Visual Preview: The Finished Manila Board

This interactive simulation shows exactly how the completed clay model should appear on Manila paper:

States of Matter | Particle Representation Project

SOLID (Ordered, Tight)

Tight grid - fixed particles

LIQUID (Clustered, Random)

Random arrangement at bottom

GAS (Wide dispersion)

Massive gaps, rapid motion

Classroom Review & Assessment Summary

Use this comparison table for quick revision - learners can copy it below their clay diagrams.

Property Tested

Solid Model (Clay Grid)

Liquid Model (Bottom Density)

Gas Model (Sparse Setup)

Arrangement Pattern

Orderly grid, closely packed

Disordered, close together

Completely random, far apart

Movement of Particles

Vibrate in fixed positions

Slide & roll past each other

Move fast, randomly & freely

Intermolecular Spaces

Almost zero / negligible

Very small, shifting spaces

Extremely large spaces

Mwalimu's Pro Assessment Tip: During project evaluation, focus on **spacing accuracy** - common errors include gaps inside the solid region or crowding gas particles. Use a marker to add tiny "vibration arrows" around solid clay balls and draw long directional arrows in the gas section to show high kinetic energy. Encourage creativity while maintaining scientific accuracy.

MwalimuEase - Empowering Kenyan JSS Teachers with Creative CBC Resources . Share this guide with fellow science educators.

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