

IHAD Summer Camp

Student Molecules

- Start by asking the students to draw a zoomed in picture of the boundary of a piece of wood in an open container and what is outside the container, through at magnifying glass, (see worksheet). (5 min) (WORKSHEET 3, one per student)
 - Have a few volunteers share their ideas with the class
 - They should have some sense of a microscopic picture
- Now move into the activity: Tell the students that they get to be molecules in a substance called “student matter” (10 min)
 - Tell all the kids in the class to sit squished close together on the floor in a circle of chairs. They might be able to rotate their heads or wiggle their bodies, but they would not be able to go anywhere. This is what happens to the *molecules* in a solid. *The solid made out of students keeps its shape and retains its same volume.*
 - Now we imagine that we raise the temperature of the student matter past the melting point. When that happens, the students can stand up and walk around within the circle of chairs (imaginary container). This would be a liquid—they are just as close together and still cannot go off on their own, but now they can move and change places. *Their volume is fixed but not their shape.*
 - Now we imagine that we raise the temperature past the boiling point. This changes the student matter into the next phase: a gas. The kids are too hyper to remain in the container and are able to jump out and run free spreading out everywhere in the room. *Since a gas does not have a fixed volume and does not have a fixed shape, it will spread out and take the shape of its container.*
- Brief recap/evaluation: Ask the class the following: (5 min)
 - What happens to a liquid if the temperature increases past its boiling point?
 - What happens to a liquid if the temperature decreases past its melting point?
 - Did the *number* of students change?
 - (See if they can make sense of the process backward—decreasing temp)