Science

At a New Orleans brass-band parade, a trombonist can change notes by moving a slide. The slide changes the length of tubing through which the air vibrates. Students can model the connection between air-column length and pitch with water and a bottle.

Materials One empty narrow-necked plastic bottle, water, and a pencil to mark three fill levels. Have one demonstrator blow gently across the opening.

Investigate Listen to the bottle empty, half full, and three-quarters full. Predict which will sound highest. Record the order you hear. Which setting leaves the shortest air column? Now predict how extending a trombone slide affects pitch if the player stays on the same harmonic.

Teacher key The shortest air column gives the highest bottle tone. Extending the slide lengthens the trombone's air column and lowers the note on the same harmonic.