# Blowing

**Apparatus**

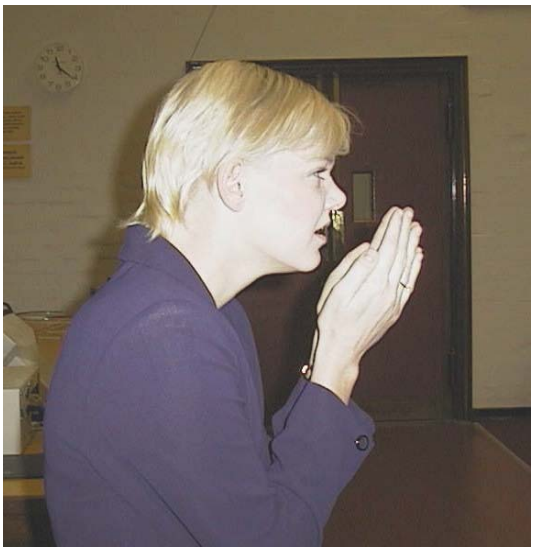
nothing – students use their own hands and mouths, although a cup of warm water for them to blow across may help

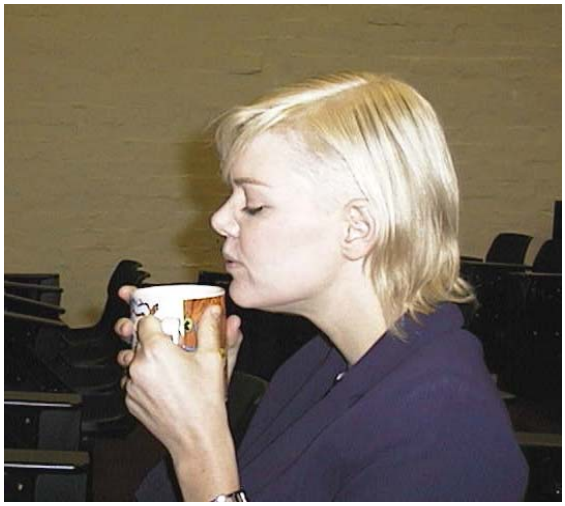
**Action**

The students blow across the cup (real or imaginary) as if they were trying to cool it in preparation for drinking it. They should observe each other doing this, and note how hard they blow, and the shape of the mouth. They then blow on their hands to warm them. They should note what they do differently when they blow to cool something to when they blow to warm something, and explain how each works.

**The Physics**

When you blow on your hands to warm them you do so with your mouth fairly open, and you puff on your hands, held close to your mouth. The air coming out of our mouth is at, or close to, body temperature, so it feels warm against your hands which are at a lower temperature.
When you blow on food or drink to cool it you purse your lips and blow a stream of air over it. As the air comes out of your mouth its volumes can expand as the pressure around it drops. As the volume increases the air cools, so it is cooler than body temperature, and quite a lot cooler than hot drink temperature. The flow of air helps increase cooling by convection.





Blowing to heat (left) and blowing to cool (right)

**Accompanying sheet**

## Blowing

Blow on your hands as if it was a cold day and you were trying to warm them.
Now blow as if you were blowing a hot drink to cool it.

How can you both heat and cool by blowing?

What do you do differently in each case, and why does it work?