

## B4: HEAT TRANSFER BY CONVECTION

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### Overview

Students might be familiar with the term **convection** in the contexts of **convection currents**, **convection heaters**, **convection ovens**, **convection microwaves** and **convection air currents**, but often find it difficult to explain the process. These activities on convection challenge students to **use their knowledge** of energy and energy transfer to **predict**, **observe** and then **explain** what happens.

**B4 ACTIVITY 1: TEABAG ROCKET** is demonstrated by the teacher, and lends itself to plenty of questions from the class. **B4 ACTIVITY 2: SPINNING** is simple, but gives students a chance to experiment with various shapes.

**B4 ACTIVITY 3: LAND AND SEA** is a weather related activity showing the direction of wind breezes in terms of offshore and inshore breezes. **B4 ACTIVITY 4 (I): CONVECTION IN WATER** uses hot and cold water to show the direction of a convection current very clearly. A mini-house heating system in **B4 ACTIVITY 5: TRANSFERRING HEAT** can also be used to highlight the importance of insulating pipes. The direction of ocean currents are shown in **B4 ACTIVITY 6: SIMULATING OCEAN CURRENTS**.

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### Suggested approaches:

- By way of introduction, hold a short word-association session on the word 'convection'. If possible, ask the students to briefly explain what they understand by terms like 'convection oven', 'convection heater, etc. This will help you to decide which activities are best initially carried out by you. Asking questions as you demonstrate the activity will give you an opportunity to address any misconceptions that the class may have.
- All of these activities are ideal for using a '**predict, observe, explain**' approach. Students should be able to **predict** what they think will happen and describe what they **observe**. The **explaining** part may well take the form of a lively class discussion.