

## STAGE TWO – ASKING NATURE

### Teacher Notes

This stage is about exploring nature. In stage one students got a clear understanding of their design challenge, what they want it to do to address their challenge and the functions it will need to deliver. Now is the time to ask nature how it performs similar functions, and think about how these can help you.

*We suggest you:*

- *Start with the 'Function Junction' activity (30 mins if done at school).*
- *Introduce the Asking Nature student worksheet:*
  - *Asking good questions (10 mins).*
  - *Exploring nature online – if cannot go outside (set as home-based task).*
  - *Exploring nature first-hand (45 mins lesson / set as home-based task).*
  - *Connecting up the pieces (45 mins lesson / set as home-based task).*

The following resources will support you.

### 1. Function Junction

This activity introduces 'functions' to students. Identifying functions in nature and how they are delivered is a key skill in biomimicry. This activity needs to be delivered outside; it could be done in the school grounds or set as a task at home. As an alternative, you could bring natural objects into the class for students, but going outside will be more satisfying.

It is helpful to remind students at this stage the definition of a function:

*Functions:* In biomimicry a function refers to an organism's adaptation which helps it survive and thrive. For example, the purpose of bear fur is to keep warm, in technical terms its function is to conserve heat (insulation). Often, 'designs' in nature have more than function. A leaf can photosynthesise (convert energy from the sun into sugar) and it can distribute water (through its veins). Human products also have functions; a kettle has the functions to both contain water and heat water (modify its physical state). In brief, a function is 'what it does.'

### 2. Asking Nature

This is the heart of biomimicry. Students 'ask nature' to find solutions to their challenge. It is important to ask the right kinds of questions. Examples are provided in the student worksheet. For example, asking nature 'how to design a warm coat' is unhelpful, but asking nature 'how do animals stay warm?' will reveal a wealth of ideas and strategies.

You will need to ensure that the functions identified in Stage One can be translated into good questions in this phase.

Asking nature ideally takes place outside, providing students opportunity to practice observation and recording skills. Again, the student worksheet provides guidelines for this. An alternative is to search online; a great place to start is with [www.asknature.org](http://www.asknature.org). There are plenty of other sites online.

We have provided a PowerPoint presentation to guide you and students through this process.