

# Butterfly Transformations

The life cycle of the butterfly is a relatively easy topic to make imaginatively engaging to students. It has its own immediate and visible drama. In what follows, then, I will not elaborate on ways of teaching this, so much as simply show how the framework can be used to shape the topic in a particular way.

## 1. Locating Meaning:

***What is emotionally engaging about the subject? How can it evoke wonder? Why should it matter to us?***

We are invited first to stop and think about just what it is about the butterfly's transformations that are important and emotionally engaging. The life-cycle of the butterfly demonstrates something almost unique in the degree of transformations it goes through. It is a study in oppositions: from the caterpillar that does almost nothing but eat to the butterfly that eats nothing, only sips nectar; from the ugly, dark cocoon of the chrysalis to the bright-winged flying flower; from the largely immobile caterpillar to the butterfly that sometimes migrates more than a thousand miles; from the incessantly growing caterpillar to the butterfly that is unchanging after it emerges from the cocoon; and so on. Most creatures, including ourselves, go through dramatic changes as we age, but we know virtually nothing else that changes so astonishingly. Knowledge about the butterfly gives us a vivid insight into the wonder of the forms of life on our planet.

**Sources of meaning:** the strange changes the butterfly goes through in its life cycle, from one extreme to another in many dimensions

**Sources of emotional engagement:** the wonderful creature that emerges from the ugly chrysalis. (A dramatic slideshow of a butterfly emerging from a chrysalis is visible at <http://www.elbosquenuuevo.org/butterflies/pictures/morpho-peleides-limpida.php>).

## 2. Thinking about the content in story form:

***How can we shape the content so that it will have some emotional meaning? How can we best bring out that emotional meaning in a way that will engage the imagination?***

### 2.1 Finding binary opposites:

***What binary concepts best capture the wonder and emotion of the topic?***

What abstract, affective opposite concepts might we use to build the knowledge on? One possible set is constrained/free. The story of the unit, in this case, will be how butterflies become able to fly free in the air having been constrained in one place on the ground. (It would be possible to choose other oppositions; the different oppositions would dictate somewhat different story lines, even though the knowledge to be taught would remain much the same. One alternative that would lead to a somewhat different focus for the lesson would be ugly/beautiful).

**Main opposition:** constrained / free

**Possible alternatives:** ugly / beautiful

### 2.2. Finding images and drama:

***What parts of the topic most dramatically embody the binary concepts? What image best captures***

### ***the dramatic contrast?***

The images of the imprisoning chrysalis and the free flight of the adult butterfly is perhaps the easiest to use.

#### **Image or metaphor that captures the binary oppositions:**

Cocoon and flying butterfly

#### **Content that reflects binary oppositions:**

The story of the butterfly's life cycle shows the contrasts continually.

### **2.3. Structuring the body of the lesson or unit:**

#### ***How do we teach the content in story form?***

#### **Sketch of overall story structure of the lesson:**

We might begin with butterfly eggs, tiny and still, giving no hint of what they will become. But we can tell them that within the prisons of the shells the creatures are preparing for a great escape, but to achieve this they will need to transform themselves a number of times; they face a series of constraints preventing them from becoming free. The tiny caterpillars then emerge, eating their way out, then they eat the rest of the shell, and then they continue to eat, eat, eat. They are among the most single-minded and voracious eaters in the animal world, growing till they burst their skins, molting, then eating, eating till they burst their skins again. All this eating is a preparation for their escape. How? How can growing bigger and bigger enable them to escape from the leaves they never move from, and move on only to find new things to eat? They consume hundreds of times their body weight, in some species thousands of times. They are mostly just jaws, claws, claspers, and a digestive system. Greatly enlarged photographs expose them as fearsome, ugly monsters.

But then, quite suddenly, they stop eating. They moult from their skins one last time and wait as their skin hardens into a chrysalis where they and lie inside inert, helpless, and cold. How can they be escaping in there? They are certainly changing again. We can see the hardened chrysalis begin to take the imprint of a developing head, thorax, and legs. But whatever is happening, it does not look like an escape from the prison of the chrysalis.

In the observations and activities the children are involved in so far, it will be important to the story line to emphasize the constrainedness of the caterpillars and chrysalises. Their range of activities and movement is very little, they can't get far at best, they are tied to their food source and then to the cocoons, they are monochrome and sluggish, and a bit dreary. This emphasis needs to be tied to the tension and puzzle of how they are going to be able to escape.

Then the cocoons are forced slowly apart. What freedom can the caterpillars expect to achieve once they come out? But out comes the first changed head and then a trembling creature with crumpled wings. A rush of blood through the frail body and the wings unfurl, and then sway and flap, and its colors glisten. And it can fly, immediately. The frail butterfly can often migrate over a thousand miles. Even though it can no longer itself eat, it returns to lay its eggs close to a food source, so the voracious, constrained caterpillar which emerges can set about preparing itself in turn for the unsuspected winged freedom of the butterfly.

While the information about butterfly transformations will not be different from usual in this lesson, what is different here is the story shape in which we see each change as part of the drama of striving for freedom from the constraints of the earlier forms of egg, caterpillar, and chrysalis. The dramatic changes take on a further meaning within the story.

## **3. Conclusion**

***How does the story end? How do we resolve the conflict set up between the binary opposites? How much do we explain to the students about the binary oppositions?***

**Concluding activity:**

We will want some way to show that the opposition between constraint and freedom in the life cycle of the butterfly can be seen as a complex relationship. The ultimate great freedom of the butterfly to travel hundreds of miles is possible only because of the constraint of its earlier forms. The squirrel that can run about very soon after birth usually spends its whole life running about in much the same way over the same territory. By contrast, the early part of the butterfly's life is static and constrained, but that is preparation for a freedom of movement the squirrel will never know. We might, that is, conclude this brief unit by looking at the relationship between early constrain and freedom in the lives of other creatures, and compare them with the butterfly's.

## 4. Evaluation

***How can one know whether the topic has been understood, its importance grasped, and the content learned?***

**Forms of evaluation to be used:**

Any of the standard forms of evaluation can be used to assess how well students understand the life cycle of the butterfly. In addition, teachers might like to explore other forms of assessing how engaged students have been by the unit. They can look at students' work, the enthusiasm with which they have explored various kinds of butterflies and been fascinated by their life cycles. In part, this information can be gained by observation. The teacher might also assess the degree to which students have exercised various cognitive tools in the process of learning about the butterfly's life cycle.