**Volcano animations**

**Lesson 1: Animation & decomposition**

**Introduction**

In this ‘unplugged’ lesson pupils are introduced to the theme of animation and produce a thinking map based on the subject. They then develop their understanding decomposition by planning a dance sequence and creating a flipbook animation.

**Time:** @60 minutes

**Materials needed:** lesson presentation, packs of sticky notes to create flipbook animations, large sheets of paper, printouts of thinking map (slide 12), animation support sheet.

**Learning objectives**

* To understand decomposition
* To use decomposition to create a dance sequence
* To create a flipbook animation of a dance sequence

**Lesson summary**

* Let’s dance (20 minutes)
* Introducing animation (15 minutes)
* Creating flipbooks (15 minutes)
* Sharing animations (10 minutes)

**Introduction: Let’s dance! (20 minutes)**

* As pupils enter the classroom, play some music to get them in a dancing mood (e.g. YMCA).
* Give out large sheets of paper and explain to pupils that they are going to create a dance sequence to meet the criteria given on **slide 3**.
* Use **slide 4** to introduce the concept of decomposition and invite suggestions to suggest how a dance sequence could be decomposed into smaller parts, one step at a time (**slide 5**).
* Explain that pupils need to use the large sheets of paper to record their sequence, in whichever way they want, as they create it.
* In small groups, give pupils time to design their dance sequence, decomposing each step on their paper.
* Invite pupils to perform their dance sequence to the rest of the class. If possible, display the large sheet of paper with the record of their sequence and invite suggestions on the accuracy.
* Highlight that their dance sequence is an algorithm that someone else could follow.

**Introducing animation (15 minutes)**

* Explain to pupils that they are going to use the BBC micro:bit to create animations in this unit. Invite pupils to recap how they have previously used micro:bits and their ideas for how it might be used for animation (**slide 6**).
* Ask pupils to think/pair/share what they know about animation already. Use **slide 7** to display a copy of a thinking map focusing on animation. Invite pupils to explain how the thinking map works and invite suggestions on what could be added to each section.
* Give out copies of the thinking map to pairs or small groups and ask them to complete their thinking map about animation. Once complete, share ideas as a class, adding them to a class-copy to display and discuss.

**Creating flipbooks (15 minutes)**

* Explain to pupils that they are going to first create a simple form of animation based on their dance sequence to get them used to creating animation (**slide 8**).
* Show resources and invite suggestions as to the form of animation this could take, linking pupils’ responses to logical reasoning, by asking them to explain the reasoning behind their answers. Discuss examples of flipbook animations that pupils have experienced (e.g. the *Dogman* books by Dav Pilkey).
* Reveal that they are going to create a flipbook animation of their dance sequence.
* Ask pupils to model how to create a flipbook animation and invite suggestions on tips: use simple main image, make a small change between each picture, etc. Record and display their tips on a large sheet of paper or the board (**slide 9**).
* Give out packs of sticky notes and allow pupils time to produce a flipbook animation of their dance sequence.

**Sharing animations (10 minutes)**

* Place each group’s set of flipbook animations on a table along with some additional sticky notes.
* Ask pupils to visit each table, watch the animation(s) and leave feedback (*what worked well* and *even better if)* on the sticky notes (**slide 10**).
* Highlight to pupils that their flipbooks are also algorithms as they could be used by someone to follow the sequence of their dance routine. Use **slide 11** to recap the learning objectives of the lesson, focusing on asking pupils to share how they have used decomposition to create algorithms.

**Extension ideas:**

* Pupils could use plasticine figures and stop motion animation software to create an animation of their dance sequence. They could also create a ‘how to create a flipbook’ guide for other pupils to follow.

**Differentiation**

**Support:** Pupils could use the animation support sheet and place each item in the corresponding area of the thinking map.

**Stretch & challenge:** Pupils could undertake independent research into different types of animation and create a timeline showing these.

**Opportunities for assessment:**

* Informal observations of pupils’ understanding of decomposition and animation techniques.
* More formal assessment if wished of pupils’ flipbooks.