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Activity

Unplugged Coding: Story Map Sequence

Level: Kindergarten–Grade 3 • **Topic:** Computer Fundamentals

*If you are looking for an accessible online version of this content, please visit the **Pinnguaq website*** (link: https://pinnguaq.com/learn/story-map-sequence).

About the Author

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Kayla is currently one of the educators in the Lindsay Makerspace who helps plan, design and deliver curriculum for a variety of programs. She has a long history of working with children in many different areas such as gymnastics, cheerleading, summer camps and public schools. She graduated from The University of Western Ontario with a BA and specialization in Nutrition and Families and also recently completed a BEd at Ontario Tech University in the Primary/Junior division. Her recent studies have led her to discover a love and interest for LEGO robotics, coding and STEAM education.

Overview

This unplugged activity is geared towards a younger audience and focuses on sequences. Learners will further explore sequences and how we can recognize them all around us such as in storybooks! Learners will either read the book *The Very Hungry Caterpillar* by Eric Carle or watch a short video of *The Very Hungry Caterpillar* read by Michelle Obama (link: https://www.youtube.com/watch?v=sqpWHU778_Y). Learners will then complete an activity sheet that allows them to create an algorithm with a specific sequence to code through the stages of metamorphosis.

Background Information

An algorithm is a series of steps or instructions provided to complete a task. A **sequence** plays a key role in an algorithm because it is the specific order that the series of steps or instructions are performed. Without this specific order or sequence an algorithm would not run correctly or would not complete the specific task. Let's look at the example provided in our unplugged activity that focused on algorithms. Each day you brush your teeth and follow the same steps in a specific order:

1. Go to the sink
2. Get out your toothbrush
3. Get out the toothpaste
4. Get water from either the tap or bottled water
5. Rinse your toothbrush
6. Put toothpaste on the toothbrush (approximately the size of your pinky fingernail)
7. Brush in circular motions EVERYWHERE for about 2 minutes
8. Rinse your mouth with water
9. Rinse your toothbrush
10. Put your toothbrush and toothpaste back in their designated spots

Can these be done in a different order? Can you brush your teeth without first putting toothpaste onto your toothbrush? There is a reason that you put your toothpaste on your toothbrush before you brush your teeth and that is because you could not properly clean the germs from inside your mouth without toothpaste. The germs in this case are the problem that needs to be solved. In order to solve this problem you follow an algorithm that is performed in a specific sequence.

Metamorphosis is a specific series of four steps that an animal or insect will go through to transform into an adult. Many different animals and insects go through these four stages when they are young in order to become an adult. Just like you, animals and insects need food, water, air and sleep in order to grow bigger and stronger. Humans take much longer to go through the process of growing into an adult unlike caterpillars, tadpoles and moths. These are just a few animals and insects that go through the process of metamorphosis.

Vocabulary

- **Algorithm** – a list or series of steps to complete a specific task.
- **Sequence** – the specific order that the series of steps or instructions from an algorithm are performed.

- **Code** – specific instructions that are given to a computer to tell it what to do.
- **Metamorphosis** (meh·tuh·mor·fuh·suhs) – a series of steps that an animal or insect goes through that transforms them into an adult.
- **Pupa** (pyoo·puh) **or Chrysalis** (kri·suh·luhs) – a hard case that surrounds the animal or insect while going through the stage of life when the animal or insect transforms into an adult.
- **Hemolymph** (hee·muh·limf) – a liquid that a butterfly pumps into its wings once it leaves the pupa or chrysalis to make their wings bigger and stronger for its first flight.

Materials

- Read *The Very Hungry Caterpillar* by Eric Carle **or** watch the book being read by Michelle Obama (link: https://www.youtube.com/watch?v=sqpWHU778_Y)
- Download and print the Story Map Coding Sheet (link: https://pinnguaq.com/app/uploads/2020/05/pinnguaq-activity-unplugged-coding-story-map.pdf)
- Pencil or crayon
- Scissors

Step-by-Step Instructions

Step 1 → Read the book *The Very Hungry Caterpillar* by Eric Carle if it is available to you at home or watch the book being read online by Michelle Obama (link: https://www.youtube.com/watch?v=sqpWHU778_Y).

Step 2 → Download and print the Story Map Coding Sheet (link: https://pinnguaq.com/app/uploads/2020/05/pinnguaq-activity-unplugged-coding-story-map.pdf). *Note: if you do not have access to a printer, use grid paper and a pencil to copy the story map.*

Step 3 → Using your scissors, cut out the arrows provided and place the arrows on the grid to guide the Egg from the start of the story map through the four steps of Metamorphosis into a butterfly. You can also direct someone else to put the arrows in the boxes or use a pencil to draw the arrows. Remember that the sequence of events is important to a computer because it directly follows the steps in a sequence that allow it to complete a task. When placing your arrows:

- Only **one** arrow can be placed inside each **empty** box

- You can only use up arrows, down arrows, left arrows and right arrows to complete the sequence

Follow Up

We want to see the awesome things you're creating! Take a photo or video and share your work with us by emailing media@pinnguaq.com or tagging **@pinnguaq** on Facebook, Twitter, or Instagram. Don't forget to include the hashtag *#LearnWithPinnguaq!*

Resources

- BBC Bitesize: Sequencing (link: https://www.bbc.co.uk/bitesize/guides/zsf8d2p/revision/1)
- The *Very Hungry Caterpillar* by Eric Carle - Read Aloud With Michelle Obama (link: https://www.youtube.com/watch?v=sqpWHU778_Y)
- National Geographic Kids - The Butterfly Life Cycle (link: https://www.natgeokids.com/uk/discover/animals/insects/butterfly-life-cycle/)
- Jack Hartmann - Life Cycle Of A Butterfly Song (link: https://youtu.be/k4PgljcarTA)

References

- Code.org, "Lesson 3: Happy Maps" – accessed May 2020. (link: https://curriculum.code.org/csf-19/coursea/3/)
- Kiwi Learning, "3 Little Pigs Unplugged" – accessed May 2020. (link: https://www.teacherspayteachers.com/Product/3-Little-Pigs-Unplugged-Coding-Map-3784238)