LESSON 1

- **Classroom poster:**

Each registered class should have received a Fruit & Veg Month classroom poster. This poster correlates with the lessons each week. In week 1, the class chooses a vegetable or fruit to follow and research during the Fruit & Veg Month weeks. Each week has a seperate section on the poster and can be completed using what was learned that week.
If needed, please download an example of a classroom poster filled out here.

Watching a video specific about the fruit/vegetable that was chosen for the poster can be useful. Please find here some videos for common fruits and vegetables:

- Carrots growing: https://www.youtube.com/watch?v=GdM08t2CzEU
  Carrots from farm to fork: https://www.youtube.com/watch?v=1nx9WMCWlWI
- Corn growing: https://www.youtube.com/watch?v=Ts--iMD4YcA
  Corn from farm to fork: https://www.youtube.com/watch?v=9-76LX6fsU4
- Tomatoes growing: https://www.youtube.com/watch?v=cLz3lsqfpMA
  Tomatoes from farm to fork: https://www.youtube.com/watch?v=VFfqgAeD5p4
- Apples growing: https://www.youtube.com/watch?v=XFCzpFWpEIo or https://www.youtube.com/watch?v=UWLmEh1HIBw
  Apples from farm to fork: https://www.youtube.com/watch?v=Q1kZSkHJao4
- Bananas growing: https://www.youtube.com/watch?v=9ru29L97MYE
  Bananas from farm to fork: https://www.youtube.com/watch?v=SgFKfVfghpg&t=22s

- **Explore further: growing crops faster, increasing yield and growing in unsuitable environments**

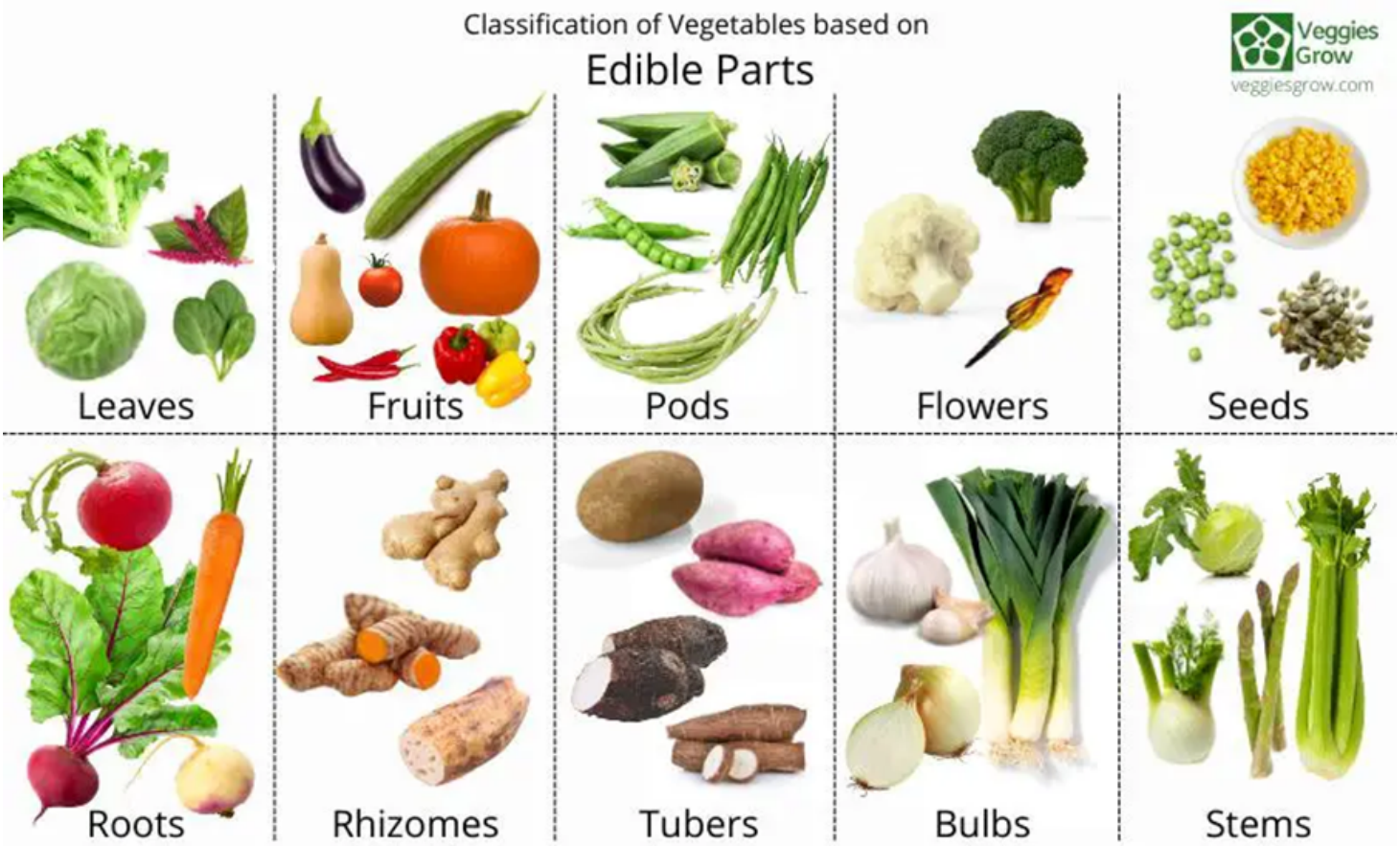
Hydroponics: Hydroponic systems involve growing plants without soil, using nutrient-rich water solutions. This method is particularly useful in urban areas or regions with poor soil quality. It allows for controlled nutrient delivery and optimal water usage.
Greenhouses: Greenhouses create a controlled microclimate for plants, protecting them from harsh weather conditions and extending the growing season. They can be equipped with temperature and humidity controls, allowing crops to thrive in regions with cold winters or extreme heat.
Genetic Engineering: Developing genetically modified crops that are more resistant to specific environmental stressors can expand the range of crops that can be grown in challenging conditions.
Crop Selection: Choosing crops that are well-suited to the local climate and soil conditions is essential. Some crops are more tolerant of extreme temperatures, drought, or poor soil quality.
Soil Improvement: In areas with poor soil quality, soil improvement techniques like adding organic matter, compost, and soil amendments can enhance fertility and water retention.
Crop Rotation and Cover Cropping: Implementing crop rotation and cover cropping practices can help improve soil health, prevent erosion, and optimize nutrient cycling.

- **Extend the Crunch & Sip counting and mathematics activity by:**

- Sorting from small to biggest, by colour, popularity, shape, etc (to avoid lots of touching of the fruits and veg, sort the students holding their fruit/veg instead)
- Measuring length, width and circumference of the fruits and vegetables

- **Explore further: What exactly are fruits and vegetables?**

Fruits and vegetables are classified from both a botanical and culinary standpoint. Botanically, fruits contain seeds and come from the flower of a plant, while the rest of the plant is considered a vegetable. In cooking, fruits are considered to be sweet while vegetables are more savory.
There are several plants that are technically fruits, though they're often classified as vegetables because of their taste. For example: tomatoes, cucumbers, avocados, olives, eggplants, zucchinis and capsicums.
Fruits and vegetables have a lot of similarities in terms of nutrition. Both are high in fibre as well as vitamins, minerals, antioxidants and plant compounds.
Vegetables are subdivided in groups, based on what part of the plant they are. See some examples below:



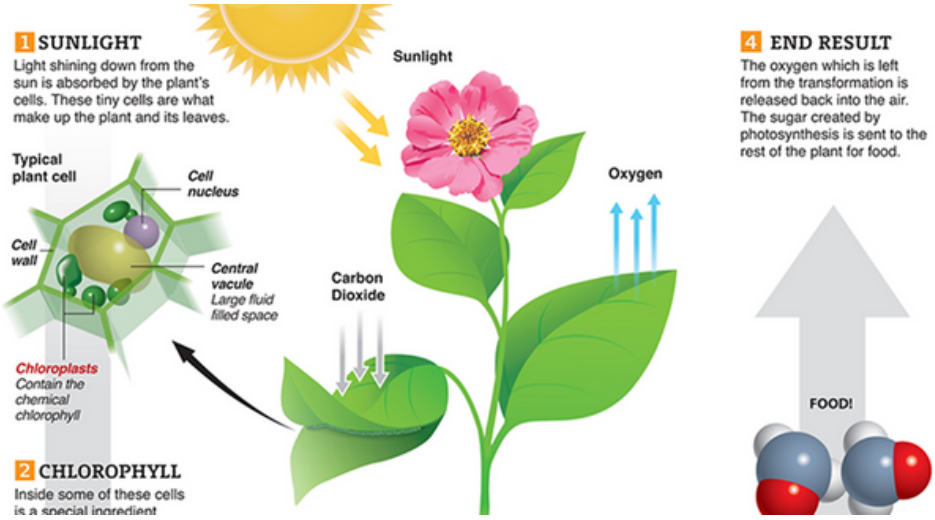
- **Extend the lesson further by playing the Fruit & vegetable game:**

- **Explore further: how does a plant grow?**

What does a plant need to grow?

1. Water: water is an important factor for plant growth. All plants require water to absorb nutrients from the surrounding soil and into the plant system. Water is also required by plants to initiate photosynthesis.
2. Air: air is also an important factor that plants need to carry out other physiological activities such as photosynthesis, transpiration, and so on. Just like animals do with oxygen, plants inhale carbon dioxide for respiration and to synthesize foods for building cell structures and reproduction.
3. Nutrients: plant also needs nutrients to grow optimally. For instance, nitrogen helps plants grow by stimulating roots, leaves, and stem development. It also hastens the ripening of fruits. While calcium encourages the production of seeds and magnesium helps in the absorption of other nutrients.
4. Sunlight: sunlight is the main factor that is needed by plants to carry out photosynthesis. Photosynthesis is the process that takes place in plants where inorganic substances (water, sunlight, carbon dioxide, and minerals) are converted into useful organic substances that can be used by plants.
5. Temperature: temperature is another important thing that plants need to carry out some tasks. For instance, high temperature helps speed up the germination process. Additionally, the release of some plants' nutrients from organic matter depends on temperature. Soil microflora requires high temperature to decompose these organic matters and make nutrients available to the plant.
6. Space: plants need space to allow both the roots and leaves to grow. The roots need to spread out to absorb water and nutrients from the soil. The leaves will need enough space to receive sunlight for the photosynthesis process.

Photosynthesis:



Informative website for teachers and students about how a plant grows: https://primaryleap.co.uk/activity/how-plants-grow/level-1

- **Explore further: agriculture**

Agriculture is the art and science of cultivating the soil, growing crops, and raising livestock. It includes the preparation of plant and animal products for people to use and their distribution to markets.

As there are more and more people on earth, more and more food needs to be produced. It is difficult for farmers to produce enough crops sometimes as they deal with issues such as climate change, drought, lack of space, loss of biodiversity, pests and much more.

Some solutions and technologies already exist to help with some of these issues. For example; with pesticides we can limit the effect of pests and with irrigation systems we can water plants in areas that are too dry to grow the crops. Greenhouses help with lack of space, by creating more space in areas that would otherwise not be suitable. However, there are drawbacks. Greenhouses require immense amounts of energy, irrigation sometimes causes water shortage for humans and pesticides are bad for human health.

Some modern-day solutions to agricultural challenges:

1. **Precision Agriculture:** This involves using technologies like GPS, remote sensing, and data analytics to optimize the use of resources such as water, fertilizers, and pesticides. By analyzing data from various sources, farmers can tailor their practices to specific areas of their fields, thereby reducing waste and increasing efficiency.
2. **Biotechnology and Genetic Engineering:** Advances in biotechnology have led to the development of genetically modified organisms (GMOs) that possess desirable traits, such as resistance to pests, diseases, or harsh environmental conditions. These crops can increase yields and reduce the need for chemical inputs.
3. **Vertical Farming and Controlled Environment Agriculture:** Vertical farms involve growing crops in stacked layers indoors, often using hydroponic or aeroponic systems. This approach reduces the need for arable land, minimizes water usage, and enables year-round production in controlled conditions.
4. **Sustainable Farming Practices:** Many farmers are adopting agroecological approaches that prioritize soil health, biodiversity, and ecosystem services. These practices include crop rotation, cover cropping, reduced tillage, and integrated pest management, which collectively promote more resilient and sustainable farming systems.
5. **Digital Agriculture and Farm Management Software:** Various software applications and platforms help farmers manage their operations more efficiently. These tools assist in planning, monitoring, and decision-making by providing real-time data on weather, soil conditions, and crop health.
6. **Drones and Remote Sensing:** Drones equipped with cameras and sensors can capture high-resolution images of fields, providing valuable insights into crop health and growth patterns. This information helps farmers identify problems early and take appropriate actions.
7. **Climate-Resilient Crop Varieties:** Researchers are developing crop varieties that can withstand the challenges posed by climate change, such as heat stress, drought, and increased pests. These varieties ensure more stable yields in the face of changing environmental conditions.
8. **Water Management Technologies:** As water scarcity becomes a significant issue in many regions, technologies like drip irrigation, soil moisture sensors, and rainwater harvesting systems are being adopted to optimize water use in agriculture.
9. **Circular Agriculture:** This concept focuses on minimizing waste and maximizing resource efficiency. It involves practices like composting, recycling agricultural residues, and using organic waste as inputs for energy or fertilizer production.
10. **Climate-Smart Agriculture:** This approach integrates practices that enhance productivity while minimizing negative environmental impacts. It involves combining adaptation and mitigation strategies to address climate challenges.
11. **Urban Agriculture:** Bringing farming into urban environments helps reduce the distance between food production and consumption, minimizing transportation emissions. Rooftop gardens, community gardens, and vertical farms are examples of urban agriculture initiatives.

LESSON 2

- **Explore further: from farm to fork**

The journey of fruits and vegetables from the farm to our tables involves a complex and interconnected process that ensures their freshness, quality, and safety. Here's a summary of how these essential foods make their way from the farm to our forks:

1. **Cultivation and Harvesting:** The process begins on farms where fruits and vegetables are grown using various farming methods, including conventional, organic, and sustainable practices. Farmers carefully cultivate crops, managing factors like soil quality, water supply, and weather conditions. Once the crops are mature and ready for harvest, they are carefully picked to minimize damage and preserve freshness.
2. **Sorting and Grading:** After harvest, the produce is sorted and graded to separate items by size, quality, and appearance. This helps ensure consistency and allows retailers to offer consumers a range of options.
3. **Packaging:** Fruits and vegetables are then packaged to protect them during transportation and storage. Packaging can vary from simple crates and boxes to specialized containers that control temperature and humidity, such as refrigerated containers for perishable items.
4. **Transportation:** The packaged produce is transported from the farm to distribution centers, processing facilities, and ultimately, retailers. Depending on the distance, this journey might involve trucks, trains, ships, or planes. Maintaining proper temperature and handling practices during transportation is crucial to prevent spoilage and maintain freshness.
5. **Processing (if applicable):** In some cases, fruits and vegetables might undergo processing before reaching consumers. This can include activities like washing, cutting, freezing, canning, or packaging into ready-to-eat formats like salads or pre-cut vegetables. Processing helps extend the shelf life and convenience of the products.
6. **Distribution and Warehousing:** Upon arrival at distribution centers or warehouses, the produce is inspected again to ensure quality and safety. It is then stored in appropriate conditions until it's ready to be shipped to retailers or foodservice providers.

- **Explore further: supply chain**

Imagine a supply chain as a big, connected process that gets things we need from where they are made to where we buy them. It's like a long journey for products, involving different steps like making, moving, and selling.

Sometimes, products can get lost in this journey. This can happen for various reasons, like:

1. Miscommunication: Sometimes, the information about how much of a product is needed or where it's supposed to go can get mixed up. This can lead to too much or too little of the product being made and sent.
2. Delays: The journey involves many stages, like factories, trucks, and stores. If something goes wrong at any of these stages, like a machine breaking or a truck getting stuck, it can cause delays and make products late or lost.
3. Wrong Decisions: Sometimes, the people in charge of the supply chain might make wrong decisions about how much to make or where to send things. This can lead to products piling up in one place while they're needed somewhere else.
4. Natural Disasters or Accidents: Things like hurricanes, earthquakes, or accidents can unexpectedly disrupt the supply chain. This might damage products or stop them from getting to where they need to be.
5. Storage Issues: If products are stored in the wrong way, like in too hot or too humid conditions, they might spoil or get damaged.
6. Theft or Fraud: Unfortunately, there are times when products are intentionally stolen or things are done dishonestly within the supply chain.

All these reasons combined can cause products to go missing or not reach the stores or customers as planned. It's like a big puzzle with many pieces, and if even one piece doesn't fit right, it can cause the whole puzzle to not work as it should.

- **Explore further: imperfect produce**

'Imperfect Produce' is a movement and business model that aims to address the issue of food waste by offering "imperfect" or "ugly" fruits and vegetables to consumers at a discounted price. These fruits and vegetables are ones that may not meet the strict cosmetic standards set by traditional grocery stores due to their size, shape, color variations, or superficial blemishes. Despite being perfectly safe and nutritious to eat, these items often go unsold and end up being discarded by farmers and suppliers, contributing to a significant portion of the global food waste problem.

Food waste is a critical global challenge, with approximately one-third of all food produced for human consumption being lost or wasted each year. This not only costs valuable resources such as water, energy, and land, but also increases environmental issues by generating greenhouse gas emissions and contributing to climate change. Moreover, food waste has ethical implications, as millions of people around the world suffer from food insecurity and hunger while edible food is discarded.

Imperfect Produce tackles this issue by providing a market for these visually imperfect yet entirely edible fruits and vegetables, redirecting them from the waste stream to consumers' tables. This approach not only helps reduce food waste but also offers consumers more affordable options for fresh produce. In addition to benefiting consumers and farmers, this movement raises awareness about the importance of embracing a more inclusive and sustainable approach to food consumption.

- A video about 'ugly produce': https://www.nytimes.com/2015/11/24/us/getting-ugly-produce-onto-tables-so-they-stay-out-of-trash.html

- **Explore further: shorter supply chains**

Imagine you're buying an apple from a store. If that apple comes from a farm nearby, it has a shorter supply chain. This means it didn't have to travel far to reach you.

Shorter supply chains for fruits and vegetables are better for a few reasons:

1. **Fresher and Tastier:** When food travels a short distance, it spends less time in transit. This means it's fresher when you buy it. Fresher food often tastes better and is more nutritious.
2. **Less Waste:** Longer journeys can lead to more food spoilage and waste. If the food is transported over shorter distances, there's less chance for it to go bad before it reaches you.
3. **Environmental Benefits:** Shorter supply chains require less transportation. Less transportation means fewer trucks, planes, and ships emitting pollution and using up fuel. This is better for the environment and helps reduce air pollution and carbon emissions that contribute to climate change.
4. **Supporting Local Farmers:** Short supply chains often involve buying directly from local farmers. This supports local economies and helps farmers in your community.
5. **Quick Response to Changes:** With shorter supply chains, it's easier to respond to changes in demand, weather, or other factors. This helps ensure a steady supply of fresh produce even when unexpected things happen.

So, in simple terms, shorter supply chains for fruits and vegetables are better because they give you fresher and tastier food, reduce waste, help the environment, support local farmers, and make it easier to deal with unexpected situations.

- **Explore further: Food safety**

In the supply chain:

Food safety in the supply chain refers to the practices and measures implemented to ensure that food products are safe for consumption as they move from producers to consumers. This involves maintaining the quality and integrity of food items throughout various stages of production, processing, transportation, storage, and distribution. Key aspects of food safety in the supply chain include adherence to hygiene standards, proper handling, storage conditions, traceability of products, regular inspections, and compliance with relevant regulations. By effectively managing food safety in the supply chain, the risk of contamination, spoilage, and health hazards can be minimized, ultimately safeguarding public health and consumer confidence in the food industry.

At home:

Food safety at home is crucial to prevent foodborne illnesses and ensure the health of your family. It involves proper handling, storage, and preparation of food to avoid contamination and spoilage. Key practices include washing hands before cooking, keeping raw and cooked foods separate, cooking meats to the appropriate temperature, and refrigerating perishable items promptly. Regular cleaning of kitchen surfaces, utensils, and cutting boards is also important. By following these guidelines, you can create a safe and healthy environment in your kitchen and reduce the risk of food-related health issues.

- **Informative video:** https://www.youtube.com/watch?v=FdnfmTIng3M

WHERE TO STORE FRUITS & VEGGIES

PRODUCE TO STORE AT ROOM TEMP

• Bananas	• Green Beans	• Summer Squash
• Basil	• Lemons	• Sweet Potatoes
• Cucumber	• Limes	• Watermelon
• Eggplant	• Onions	• Winter Squash
• Garlic	• Oranges	• Zucchini
• Grapefruit	• Potatoes	

STORE THESE ON YOUR COUNTER, THEN MOVE TO FRIDGE WHEN RIPE

• Apricots	• Melons	• Pears
• Avocados	• Nectarines	• Pineapple
• Kiwi Fruit	• Papayas	• Plums
• Mangoes	• Peaches	

PRODUCE TO STORE IN THE FRIDGE

• Apples	• Carrots	• Lettuce
• Asparagus	• Cauliflower	• Parsley
• Blueberries	• Cherries	• Peas
• Corn on the Cob (in the husk)	• Cilantro	• Pomegranate
• Broccoli	• Dark Leafy Greens	• Raspberries
• Brussels Sprouts	• Grapes	• Strawberries
• Cabbage	• Leeks	

- **Explore further: Flowchart shapes**

To increase the difficulty of lesson 2, students can use the below shapes that are used in professional flowcharts.

Find more detailed information here: https://www.visual-paradigm.com/tutorials/flowchart-tutorial/

Symbol	Name	Function
	Start/end	An oval represents a start or end point
	Arrows	A line is a connector that shows relationships between the representative shapes
	Input/Output	A parallelogram represents input or output
	Process	A rectangle represents a process
	Decision	A diamond indicates a decision

LESSON 3

- **Example brochure**

LESSON 4

- **Stage 1 experiment options**

1: Celery stems, cabbage leaves and flowers

Materials:
- 1 cabbage leave, celery stem or white flower per student
- Food colouring (the darker the better. Tip: Use vegetable based colouring so it doesnt stain hands and clothes)
- 1 cup/jar per student
- Pencils/colouring pencils
- Paper towels
- 1 WS8.1 per student

Preperation:
Fill cups with water and 6-8 drops of food colouring (or have student do this themselves if possible). Give each student a cabbage leaf, celery stem or white flower, a paper towel, pencil and a printer Worksheet 8.1.

Experiment:
Students can follow the questions on their worksheet to self-guide their experiment.
The leaves, stems and flowers will turn colour within a few hours and will get brighter in colour the longer it is left in the water. The experiment will take 3 days. Students will measure the colour of their leaf, stem or flower and the waterlevel in the cup.
After the experiment, they collate their data and observations and draw conclusions.

2: Storage experiment

Materials:
- A fruit/vegetable per student (the same for all students; recommend strawberries as they rot quickly)
- Access to a fridge
- 3-4 different storage options (i.e. an airtight container, a container with holes and/or no lid, a ziplock bag, a container in the fridge, etc)
- Pencils/colouring pencils
- 1 WS8.2 per student

Preperation:
Give each student a piece of fruit/vegetable and assign a 'type of storage'. Distribute the storage options among the students.

Experiment:
Students can follow the questions on their worksheet to self-guide their experiment.
Students will compare the rotting process between a fruit/vegetable stored in different ways. The experiment might take up to a week; it is up to the teacher to decide on how many days measurements will be taken. After the experiment, they collate their data and observations and draw conclusions.

Extend: Some fruits/vegetables can be kept fresh longer when stored in paper towel or with another fruit or vegetable: use this as one of the storage options

- **Stage 1 experiment options (continued)**

3: Growing seeds

Materials:

- Easy to grow seeds (e.g. beans, pumpkin, capsicum, strawberries, radish, lettuce, kale, cerrots, etc)
- Pots/cups/ziplock baggies + tray for drainage
- Potting mix
- Clingfilm
- 1 WS8.3 per student

Preperation:
Before class, or with the students, put potting mix into the cups and distribute among the students. Give each student some seeds and assign each student an experimental condition (see experiment). Print one WS8.3 per student.

Experiment:
Students can follow the questions on their worksheet to self-guide their experiment.
Each student will do one of 4 experiment conditions:
1) Seed is watered, gets sunlight, air and has soil
2) Seed is watered, gets sunlight, but has NO air (put a bag or clingfilm over the cup)
3) Seed gets sunlight, air and has soil. Seed is NOT watered
4) Seed is watered, has air and has soil. Seed is NOT exposed to the sun (put cup in a dark area)
The experiment might take up to a few weeks; it is up to the teacher to decide on how many weeks measurements will be taken. After the experiment, they collate their data and observations and draw conclusions.

Tip: watch these videos with the class before the experiment:
Part 1: https://www.youtube.com/watch?v=Lly75dEbXE8
Part 2: https://www.youtube.com/watch?v=8kTt4xHHLzk

- **Stage 2 & 3 experiment options**

Please find below 3 suggestions for experiments that can be done in class. Need some more, but simpler experiment ideas? Have a look at the previous pages for Stage 1 experiments.
Each of the following experiments can be adjusted and expanded. These experiments are easy to follow and do in class, but the students are encouraged to come up with, and research, their own experiment where possible.

1: Yuck, what happened to my apple? How food wrappings affect spoilage

Objective: To investigate which type of food wrapping will keep sliced apples placed in the refrigerator the least spoiled and freshest

Materials:

- Apples, all the same type (Make sure the apples do not have any bruises or dents on the outside and that each looks similar to the other)
- Cutting board and knife
- Aluminium foil
- Wax paper (baking paper)
- Plastic wrap (cling foil)
- Ziplock bags
- Fridge
- 1 WS12/WS15 per student

Experiment:
1) Prepare your experiment by completing the first questions on WS12/15.
2) Cut the four apples into quarters, lengthwise from the stem to the base. You should end up with 16 apple quarters. Try to cut the apples so that each quarter is as similar in size and shape as possible.
3) Wrap the apple quarters in the four different wrappings. Leave three apple quarters unwrapped.
4) Place all of the apple slices in the refrigerator.
5) Keep the apple slices in the refrigerator for six days. Each day, take a look at them to see how they are changing, but do not touch or move them. Write any observations on WS12/15.
6) After the apple slices have been in the refrigerator for six days, take them out of the refrigerator.
7) Group the apple slices by the wrapping they are wrapped in. Group the three unwrapped apple slices together.
8) Unwrap each apple slice to see how fresh each apple slice looks.
9) When you are done analyzing the apple slices, you can compost them or throw them in the trash. Do not eat the apple slices, even if they look edible, because they can have dangerous pathogenic microorganisms!
10) Complete WS12/15

Extend:

- Try this with other fruits/vegetables as well!
- Some fruits/vegetables can be kept fresh longer when stored in paper towel or with another fruit or vegetable: use this as one of the storage options

Use the website below for more extensive steps and information on this experiment:
https://www.sciencebuddies.org/science-fair-projects/project-ideas/FoodSci_p025/cooking-food-science/how-food-wrappings-affect-spoilage

- **Stage 2 & 3 experiment options (continued)**

2: Is the soup ready? Measure how much water is absorbed by dried beans

Objective: Measure how much water is absorbed by dried beans.

Materials:
- Plastic cups
- Permanent marker
- Dried beans, pinto
- Scale, accurate to 1 gram (g)
- Measuring cup
- Water
- Timer or stopwatch
- Plastic wrap
- Strainer or colander
- Paper towels
- 1 WS12/15 per student

Experiment:
1) Prepare your experiment by completing the first questions on WS12/15.
2) Label six plastic cups with the permanent marker, as follows:
    - Cup #1: Zero
    - Cup #2: 0.3 hour (20 minutes)
    - Cup #3: 1 hour
    - Cup #4: 3 hours
    - Cup #5: 9 hours
    - Cup #6: 27 hours
3) Put one plastic cup onto the scale and zero the scale. Have an adult show you how to do this if you do not know how. Then weigh out and put 50 grams (g) of the dried beans into each of the six cups.
4) Add 100 mL of water to cups 2–6. (Cup #1 is a "no water" control)
5) Record the time that the water is added in your lab notebook.
6) Cover the cups with plastic wrap.
7) After 20 minutes, pour the contents of cup # 2 into a strainer.
8) Shake as much water as you can off of the beans in the strainer.
9) Pour the beans onto several sheets of paper towels.
10) Gently dry the beans with the paper towels.
11) Put a clean dry cup on the scale and zero the scale
12) Add the beans that soaked for 20 minutes (from cup #2) to the cup on the scale.
13) Record the weight of the beans from cup #2 in a data table
14) Discard the beans from cup # 2
15) Repeat steps 6–14 for cups 3–6, at the appropriate times (see step 2)
16) Repeat the entire procedure two more times, for a total of three trials. This ensures that your results are accurate and can be repeated.
17) On your worksheet, calculate the average masses. To do this, add the data from the three trials for each amount of time together, then divide by three (for three trials). You can make a table.
18) Graph the average mass of the beans over time. Put the mass (in grams) on the y-axis (the vertical axis) and the time (in hours) on the x-axis (the horizontal axis). You can do this by hand on WS12/15, or use a website like Create a Graph.

- **Stage 2 & 3 experiment options (continued)**

2: Is the soup ready? Measure how much water is absorbed by dried beans (continued)

Extend:

- Compare water absorption by trying this science fair project with different kinds of beans, peas, and lentils.
- Determine the rate of water absorption, as follows. Subtract 50 g from the average weight, in grams, to get the weight of water absorbed. Divide the weight of water absorbed by the time in hours. Add this data to your table and graph the time (in hours) on the x-axis and the rate of absorption (in grams per hour) on the y-axis.
- Soak the beans at different temperatures. For example, soak them for 3 hours at 0°C (ice water), 30°C, 60°C, and 90°C (simmer in a pot on a stovetop). Compare the rates of rehydration at the various temperatures.
- See the Science Buddies science fair project Tough Beans: Which Cooking Liquids Slow Softening the Most? for a procedure to determine how soft the beans are after soaking in water.

Use the website below for more extensive steps and information on this experiment:
https://www.sciencebuddies.org/science-fair-projects/project-ideas/FoodSci_p059/cooking-food-science/measure-how-much-water-is-absorbed-by-dried-beans

- **Stage 2 & 3 experiment options (continued)**

3: Can you make your plant grow fastest?

Objective: Who can grow their fruit/vegetable plant the fastest?

Materials:
- Easy to grow seeds (e.g. beans, pumpkin, capsicum, strawberries, radish, lettuce, kale, cerrots, etc). They must be the same for all students
- Pots/cups/ziplock baggies + tray for drainage
- Potting mix
- 1 WS12/15 per student
- This experiment might require students to design/engineer their own solutions and thus might require additional materials

Experiment:
1) Prepare your experiment by completing the first questions on WS12/15. Do some research about the seed you are growing and what the best way to grow it is. Do some further research to see what other ways will help you seed grow.
Did you know for example that there is some evidence that classical music helps a plant grow? What about metal music?! Or your seed might love warm and humid environments, how can you provide that environment? Maybe you could even construct a small greenhouse!
Can you find any other ways to help a plant grow?

2) Plant as many seeds as possible. The more you have, the more accurate your experiment.
3) Measure and record your data on WS12/15 each day, until the end of the experiment. Make sure you are consistent and precise with measurements and applying the conditions to your plant (for example: watering, sun exposure and something extra like playing music)
4) At the end of the experiment (time-limit set by your teacher), make tables and graphs (see WS12/15) and compare results to those of other students in the class.

Tip: Consider what you will measure. Will 'height' be the best way to compare the plants? Or perhaps it's better to measure increase in weight? How would you go about doing that?

Tip: Watch Video 14 together with the class to see an example of this experiment:
https://www.youtube.com/watch?v=XTNgaSthMyo